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| APPLICATION NO.  | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO.             |
|--|-------------|----------------------|---------------------|------------------------------|
| 10/583,007   | 07/21/2008  | Larry D. Wolfe       | 06011               | 6127                         |
| 9979   | 7590        | 07/22/2010           | EXAMINER            |                              |
| KRATZ, QUINTOS & HANSON, LLP<br>Greater Beneficial Union of Pittsburgh Building<br>4232 Brownsville Road Suite 308<br>Pittsburgh, PA 15227 |             |                      |                     | MCGUTHRY BANKS, TIMA MICHELE |
| ART UNIT   |             | PAPER NUMBER         |                     |                              |
| 1793   |             |                      |                     |                              |
| MAIL DATE  |             | DELIVERY MODE        |                     |                              |
| 07/22/2010   |             | PAPER                |                     |                              |

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

|                              |                        |                     |  |
|------------------------------|------------------------|---------------------|--|
| <b>Office Action Summary</b> | <b>Application No.</b> | <b>Applicant(s)</b> |  |
|                              | 10/583,007             | WOLFE ET AL.        |  |
|                              | <b>Examiner</b>        | <b>Art Unit</b>     |  |
|                              | TIMA M. MCGUTHRY-BANKS | 1793                |  |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 12 July 2010.  
 2a) This action is **FINAL**.                    2b) This action is non-final.  
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1,4 and 5 is/are pending in the application.  
 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
 5) Claim(s) \_\_\_\_\_ is/are allowed.  
 6) Claim(s) 1,4,5 is/are rejected.  
 7) Claim(s) \_\_\_\_\_ is/are objected to.  
 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.  
 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
 a) All    b) Some \* c) None of:  
     1. Certified copies of the priority documents have been received.  
     2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
     3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                         | Paper No(s)/Mail Date. _____ .                                    |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ . | 5) <input type="checkbox"/> Notice of Informal Patent Application |
|  | 6) <input type="checkbox"/> Other: _____ .                        |

## **DETAILED ACTION**

### ***Status of Claims***

Claim 1 is currently amended, Claims 2 and 3 are cancelled and Claims 4 and 5 are as originally filed.

### ***Claim Rejections - 35 USC § 103***

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 1, 4 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over applicant's admitted prior art in view of Okana et al (US 4,541,617), Zebrowski (US 2004/0083851) and Nicholson (US 4,208,388).

Applicant admits as prior art adding lime to molten metal in a steelmaking vessel via oxygen lances (page 2). Further, the independent claim is written in Jepson format, which is taken as an implied admission that the subject matter of the preamble is the prior art work of another; see *In re Fout* (213 USPQ 532, CCPA 1982). However, the admitted prior art does not teach adding from above as in Claim 1, the particle size of the lime as in Claim 1 or the flow aid material as in Claims 1, 4 and 5.

Regarding adding from above, Okana et al Fig. 1 teaches a lance structure for oxygen blowing. The blowing includes adding flux such as dolomite and quicklime in powdered form (column 1, lines 22-27). Dolomite and quicklime (high calcium lime) are types of lime materials. It would have been obvious to one of ordinary skill in the art at the time the invention

was made to add oxygen and flux from above in the process of the admitted prior art as taught by Okane et al, since Okane et al teaches that this type of blowing promotes dephosphorization and desulfurization (column 1, lines 36 and 37).

Regarding the particle size, Zebrowski teaches a method of removing sulfur from molten iron using a calcium compound (abstract). The compounds include CaO. The mesh size is 14-500 mesh [0018]. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the particle size taught by Zebrowski in the process of the admitted prior art, since Zebrowski teaches that the particle size is selected to provide the necessary activity or reactivity with the sulfur in the molten iron; when the particle size is too large it results in poor desulfurization efficiencies [0018].

Regarding the flow aid, Nicholson teaches enhancing the flowability of lime by treating with polymethylhydrogensiloxanes and polydimethylsiloxanes (abstract). It would have been obvious to one of ordinary skill in the art at the time the invention was made to add the flow aid of Nicholson in the process of the admitted prior art, since Nicholson teaches enhancing flowability for long periods of time and exposure to high humidity (column 2, lines 26-30).

### ***Response to Arguments***

Applicant's arguments filed 12 July 2010 have been fully considered but they are not persuasive. First applicant argues that there is a difference between blowing lime into a BOF molten bath where the lime interacts with supersonic O<sub>2</sub> jets in the molten slag and injecting lime using oxygen as a carrier gas. However, the claim does not recite that the lime is injected with a carrier gas. The Laval nozzle of Okane et al is still a lance (column 2, line 43). Second,

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applicant states that Zebrowski relates to Mg and CaO powder and is used at the hot metal desulfurization station. However, Zebrowski is not limited to ladle treatment. Finally, Zebrowski teaches treating quicklime (column 1, line 67).

### ***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to TIMA M. MCGUTHRY-BANKS whose telephone number is (571)272-2744. The examiner can normally be reached on M-F 8:30 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on (571) 272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/George Wyszomierski/  
Primary Examiner  
Art Unit 1793

/T. M. M./  
Examiner, Art Unit 1793  
21 July 2010